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ABSTRACT

This handbook is a result of a project in Adult Vocational Education undertaken by the Illinois Office of Education's Division of Adult, Vocational, and Technical Education, and the College of Education at Southern Illinois University at Carbondale. The handbook is intended to provide an introduction to adult vocational education for new teachers, and serve as a reference for planners and teachers of adult vocational education programs. The first section presents a rationale for adult vocational education through an analysis of actual and potential clientele for such programs, and the reasons for participation cited by adults. The second section illustrates learning characteristics of adults. A self-instructional program elaborating on the characteristics and reinforcing their importance is also included along with similar methods and techniques of adult learning. Section 3 provides an approach for defining and developing vocational instruction which can be readily accommodated to the adult learning characteristics. In this section data is provided for a discussion of alternate means for sequencing materials to facilitate learning. The final section includes references and resources for use by adult vocational educators, most of which are inexpensive and readily available. (Author/WL)

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DELIVERING VOCATIONAL INSTRUCTION TO ADULT LEARNERS

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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TABLE OF CONTENTS

Workshop Staff 1

Preface. 2

Why Adult Vocational Education 3

How Adults Learn 8

Learning Approaches For Adults 12

Instructional Techniques 21

Arranging Content For Better Adult Learning 27
Suggestions for Sequencing Content 32

Resources and References 42

Techniques of ERIC Search 46
Photographic Overviews 50

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PREFACE

This handbook is one outcome of a project in Adult Vocational Education undertaken by the Illinois Office of Education's Division of Adult, Vocational, and Technical Education, and the College of Education at Southern Illinois University at Carbondale. The handbook is intended to provide an introduction to adult vocational education for new teachers and serve as a reference for planners and teachers of adult vocational education programs.

The first section of this handbook presents a rationale for adult vocational education through an analysis of actual and potential clientele for such programs, and the reasons for participation cited by adults.

The second section illustrates learning characteristics of adults. A self-instructional program elaborating on the characteristics and reinforcing their importance is also included along with similar methods and techniques of adult learning.

Section three provides an approach for defining and developing vocational instruction which can be readily accommodated to the adult learning characteristics. In this section data is provided for a discussion of alternate means for sequencing materials to facilitate learning.

The final section includes references and resources for use by adult vocational educators. Most of these are inexpensive and readily available.

It is hoped that the handbook will assist adult vocational educators in accomplishing in-service education for adult teachers and provide references of use for further development of adult vocational programs.

WHY HAVE ADULT VOCATIONAL EDUCATION?

Historically, vocational education has been in existence on a national legislative level since 1917 with the passage of the Smith-Hughes Act. Tracing its development through the decades to it's present status reveals many changes in funding, emphasis, and direction, but one characteristic has remained constant. Vocational Education has from it's inception been concerned with the preparation of people for America's labor force. Traditionally, it has provided secondary and post-secondary experiences for those individuals who needed, wanted, and could benefit from it.

Adult education is that type of education that provides enrichment to individuals who are classified as adults (ages 16-18-21 varying according to state school codes) for the purpose of upgrading their way of life, e.g., basic education, leisure time, self-enrichment, retraining, employment promotion.

The benefits of combining the efforts of these two fields of education are many. This section will explore these benefits from both a historical and philosophical base with implications and directions for the future.

Adult vocational education implies many things. Two of the more significant implications are an outgrowth of the educational institution. First, many adults seeking this new form of education may have been passed by in their respective mandatory public school system. Second, there are those adults that are seeking education which is additional to that received in their formal years of schooling or different than that previously received for a variety of reasons.

To emphasize this need, the U.S. unemployment statistic on a national level was 11.2% as of December, 1975. Many people in this category possess no saleable skill, or their skill has been outdated by society and technology. All facets of the occupational spectrum are affected by this phenomenon.

In speaking of the jobs outdated by technology, one might be cognizant of three areas. One area centers around the immediate training of terminal workers to meet the needs and demands of society, e.g., training of women for assembly line ammunition production during World War II. The pulse of the American economy is based on a well-balanced level of national productivity. Training people for a specific skill, without allowing them the opportunity to migrate according to their physical and mental abilities is unchallenging and dehumanizing.

In the second area of technological advances, many people are finding that they need to upgrade their present competencies for advancement in their acquired professions or skill areas. Historically, the age of the computer and other electrical-mechanical systems has replaced, in many cases, the dehumanizing and laborous types of jobs. Upgrading of one's profession or skill is essential for the maintenance of one's physical and mental well-being.

Another effect of technological development is similar to the theory behind planned obsolescense. During the Sputnik years, the U.S. realized that it's educational system lacked a scientific base. As it moved to develop that base, many knew quite well that the need would diminish in the near future. The engineers, chemists and similar people trained during the early sixties are now facing unemployment because

its labor market cannot absorb their skills. This is referred to as the area of structurally unemployed. The existing labor market structure is unable to utilize the available trained personnel.

The areas of underemployment, mid-career changes, occupational mobility, disabled persons and women are important components of our technological society. These areas all lend support to the concept of adult vocational education. Within our society there are those individuals who are considered to fall within each of the aforementioned areas.

In a recent article, published by Newsweek April 26, 1976, the concept of overeducation and its effect on underemployment was very dramatically exemplified. The American dream that education results in a highly prestigeous and well-paying job is now becoming obsolete. James O'Toole (1975) in a recent monograph "The Reserve Army of the Underemployed" stresses that we are training and educating people for the sake of training and educating them, and not for the welfare and productivity of a nation.

Mid-career changes and occupational mobility support most effectively the need for adult vocational education. With our technology and economy changing at a greater rate, new occupations emerge and others become extinct. People are now developing desires to make mid-career changes. The U.S. labor statistics support this theory. It states that a person will change his or her occupation at least five (5) times within their productive years.

Without the vehicle of adult vocational education, these people seeking a career change have few vehicles to assist in accommodating these changes.

Disabled clientele numbered 2,600,000 as of 1973. Our society cannot afford to ignore this valuable resource. Their contributions are valuable and should be utilized to the maximum. They can find enrichment and benefit from programs tailored to their needs. Programs of this type are part of existing adult vocational education in many areas.

The return of women to the labor force adds impetus for the support of adult vocational education. There were 32,000,000 women in the labor force as reported by the Bureau of Labor Statistics in 1975. Nine out of ten women will at one time work for pay. Women occupy 38-40% of our total labor force. It is evident that this segment of our population needs the benefits of adult vocational education. No longer are women satisfied with the roles that their mothers traditionally held.

The reasons for having and increasing the efforts in adult vocational education are, then, many and powerful. In the next section the crystal ball act seeks a glimpse of the future direction of this educational field.

The material previously presented pointed out reasons for support of adult vocational education. The future is dependent upon the perceived images as viewed by the people within the society. As people continue to realize that they have the need for flexibility, mobility and openess are more important than rigidity, stagnation and closure, the future is bright. To summarize the future of adult vocational education from the perspective of work, a quote from Albert Camus in the book Work in America is as follows: "Without work all life goes rotten. But when work is soulless, life stifles and dies." It is

the aim of adult vocational education to provide the adult segment of our population with the many benefits offered by the combination of adult education and vocational education.

References

O'Toole, James. The Reserve Army of the Underemployed. (Monograph on Career Education). Washington, D.C.: U.S. Government Printing Office, 1975.

Richardson, Elliot L. Work in America. Report of a special task force to the Secretary of Health, Education and Welfare. Massachusetts: MIT Press, 1973.

Sheils, Merrill and Others. "Who Needs College?" Newsweek, April 26, 1976.

HOW ADULTS LEARN

How do adults learn? What are some noticeable characteristics of learning pertaining to adults? One distinction about adults and their learning behaviors is the adult generally has the capability and wherewithal to make commitments and to believe that something is important. Many adults have medical insurance of some sort either paid for by ourselves or by the company we work for. We have life insurance and are willing to make sacrifices for having this kind of protection. It is something that we all hope we do not have to use. It is abstract in nature. Adults, generally speaking, have the ability, willingness, and maturity to sacrifice, plan for, and make commitments for the future because of what it means to them.

A second characteristic is that most average adults have experiences that they can and do use in their learning. These experiences offer tremendous opportunities for association, interaction, and learning. It is these experiences that allow for role identity and self acceptance. An individual's perception of himself, his relation to others, and his place in the whole scheme of things is crucial to the role he ultimately plays. Psychologists tell us that a person's behavior is strongly influenced by what we believe others expect of us, by what we believe is our relationship to others and to events. Our own concepts of ourselves is influenced by the way others act toward us. We seek a role to assume and develop from this capability our own unique person.

A third characteristic is that adults tend to be very task oriented. Tasks are specific identifiable achievements. Most adults are

achievement oriented in their life styles. The fact that most adults have a list of things to do usually in a numerical order. Some have a daily list, some only on weekends. The keeping of calendars, by the hour with appointments, meetings, and activities are all reflective of our adult cultural need for task success. Most adults feel good by completing assignments, activities, and specific jobs. We generally feel guilty when we have not completed what we had set out to do. Our feelings of laziness frequently are a result of not being productive.

A further learning behavior is that adults learn better through participation. There are two types of participation. One way to actively participate is through the verbal associations used by the teacher. The use of analogies, illustrations, demonstrations and examples are good ways to increase the listening acuity through participating descriptions. The other form is active verbal participation. By actually having to do what is to be learned adults will learn more effectively. Participation is important and has to be taken into consideration and used in the learning process, especially as that process is organized for adult learning.

A fifth adult learning consideration is that most people need success in learning. They need to experience and know that they have learned that which is to be learned. Acknowledgement, compensation and reward all should be used in a systematic manner. Adults having a goal, a purpose for learning, have a built in means for using success as a motivation for continued learning. Adults have the ability to be their own best source of motivation for effective learning.

A sixth factor for learning is transfer. Most adults have a basic degree of freedom in choosing and selecting what they want to partici-

pate in and will select that area of learning they see is of value to them. For the most part, value is perceived as that learning in which the potential for transfer to their own needs is obvious. It is the application and adaptation of learned content and skills in new situations which has the most value for adults.

Visual learning is another factor for consideration. We know that sight has more retention and acuity in the learning process. The use of visual signs in descriptions and in such things as directions is prominent to most of us. I would propose that this emphasis is a reflection of our culture and the importance placed on sight and learning in our society. Television, neon signs, magazines and store display windows use sight as the major means of learning transaction. Adult learners are thus conditioned to visual media in their learning and it behooves instructors to maximize this mode of instructional presentation when teaching adults.

Step-by-step learning is a final consideration of adult learning. Most adults learn in a step-by-step fashion in which progress is made slowly. It is somewhat like learning to play the piano or to do mathematical computations, you learn basic information which is necessary for further development of the skill. Few people, without any structured learning experiences, can play a piece of music. It is knowing how to establish these steps of learnable information and to teach them in the adult classroom that needs to be focused on in terms of the improvement of adult learning.

Several characteristics of adult learning have been proposed and presented. Research studies have indicated that these principles apply and are pertinent to most adults. Why the concern for such learning characteristics? A major objective we all have is the improvement

of learning in the most efficient, accurate, and easiest possible manner. From an understanding of these factors, we should better be able to improve the learning transactions which take place in the adult classroom.

Directions: Please read and circle the answer that you feel is the most appropriate. Check your circled response with the answer(s) to the right of the page. In some instances you will have to write a response in the space provided. The correct word or phrase is found in the answer column.

ITEMS	ANSWERS
1. Adults learns better by doing. That is, if an adult is to learn a particular behavior or skill, the adult should ____ that behavior. a. do b. write c. recognize d. read about	a.
2. It is not enough that the adult is actively involved. The adult must be actively involved doing that behavior which is to be learned. That which the adult does actively should be ____ as the behavior to be learned. a. different b. recognized c. the same d. listed	c.
3. One aspect of auto mechanics instruction is diagnostic tune-up skills. While the adult student may be told about using these skills, the adult must ____. a. work on a variety of engines b. work on car engines c. have read about diagnostic tune-up skills d. perform diagnostic tune-up skills	d.
4. An objective of electrical wiring instruction is for adults to learn to use certain reference materials. According to the principle being advocated, in order to learn this skill the adult must ____. a. practice using wiring reference material b. distinguish between different wiring procedures c. possess above average reading skills d. be able to use the library	a.

5. Adults generally learn more when faced with a problem situation. Focusing on a problem to be solved directs the adults attention by ___. b.
   a. making the adult more aware of what is not known
   b. making the adult more aware of what is needed to be known
   c. making the adult responsible for own learning

6. It is apparent that when adults are given ___ they will learn more effectively. b.
   a. a way to approach learning
   b. a problem to solve
   c. a narrative description
   d. a motivator

7. A problem is best stated in the form of an evaluation, comparison, or estimation. Standards and criteria are important in ____. c.
   a. recall questions
   b. recognition questions
   c. evaluation

8. If organizing instruction around a problem is an effective way to increase adult learning which of the following statements would be better? b.
   a. What are the appropriate techniques for faceplate turning
   b. Evaluate the advantages of the three basic types of upholstery techniques

9. Focusing on a problem to be solved by an answer is related to the need for adults to be actively doing. Focusing on a problem allows the adult to engage in problem solving to determine which ____ is best. d.
   a. problem
   b. solution
   c. question
   d. answer

10. Combining the two concepts presented so far, learning will be effective when the adult ____ focuses on determining the solution to a ____. b. and c.

a. collectively	a. story
b. actively	b. task
c. individually	c. problem
d. solely	d. discussion

11. Retention of what is learned must be sought so that adults may use and build upon what is learned. The adult teacher must be concerned with factors which increase ____. b.
    a. thought
    b. retention
    c. solutions
    d. learning

12. Several factors will increase retention of what is learned. One factor concerns how the adult learns in the first place. If the adult arrives at the answer as a result of being told, retention will not be increased. This means that adults must be provided learning activities which will lead them to ____ answers on their own. a.
    a. arrive at
    b. be told
    c. design
    d. compare

13. Apparently, increased learning effectiveness of adults arriving at an answer on their own, is due to their experiencing the thought processes needed to arrive at the answer, to increase retention the adult should actively complete ____ necessary to arrive at the answer. d.
    a. experiments
    b. the task
    c. jobs
    d. thought processes

14. A second factor which enhances retention is USING what has been learned. Using what has been learned may be accomplished through discussing its implications, through applying it in other situations, through basing further learning on it, or by continuing to practice it. The adult teacher should organize courses so that what is learned at one stage, is ____ by the adult in later stages of the course. c.
    a. compared
    b. taught
    c. used
    d. related

15. Discussing the implications of what has been learned, applying it in other situations, basing further learning on it, and continuing to practice it, are all ways of providing a certain "stamping-in" effect which will increase the retention of what is learned. To retain learning, the adult must ____ it in some way after it has first been learned. c.
    a. be aware
    b. have told
    c. use
    d. relate

16. What are the four ways by which the retention of what has been learned may be increased by using it in further study.
    1. ____ its implications. b.
    2. ____ it in other situations. c.
    3. Continuing to ____ it. f.
    4. ____ further learning on it. h.
    a. describing
    b. discussing
    c. applying
    d. translating
    e. comparing
    f. practice
    g. relating
    h. basing

17. The principle, then, is that the adult must first learn the material, practice it, and then use it. True or false. true

18. A third factor which plays an important role in increasing retention is reinforcement. This not only provides the adult with feedback concerning what is a correct response, but also associates an incentive condition with the performance. The adult teacher should be concerned that the adult's good performance is ____. d.
    a. recorded
    b. noted
    c. graded
    d. reinforced

19. There appears to be agreement on the value of reinforcement following as closely after the adult's response as possible. Immediate reinforcement enables the adult to build on a correct response if indicated. The adult teacher should thus be concerned that the adult's good responses and performances are reinforced ____. d.
    a. frequently
    b. consistently
    c. when necessary
    d. as soon as possible

20. Spoken and written comments are the adult teacher's most useable reinforcers. For example, if an adult gives a correct response, the adult teacher might respond by saying, "good". The "good" is an example of ____. d.
    a. acknowledgement
    b. feedback
    c. a positive self-image builder
    d. immediate reinforcement

21. Sometimes an adult's response or performance is only partially satisfactory. This makes the task of providing reinforcement more difficult. Positive reinforcement should reveal to adults what aspects of their performance are correct and give clues to improvement of their total response. For example, if an adult was asked "what are the mechanics of the power train of a car?" and he responded "transmission, propellor, shaft, and differential" the adult teacher might say, "good, and what else?" What should be reinforced? c.
    a. the total performance
    b. the performance which can be measured
    c. the performance, or part of, that is correct
    d. the adult's effort rather that performance

22. A number of concepts about adult learning have been advanced.
    1. Adults need to actively ____ what they are to learn. d.
    2. Adult learning needs to be focused on a ____ to be solved. b.
    3. Adults need to arrive at answers on their ____. e.
    4. Adults need to ___ what they have learned in further learning activities. a.
    5. The correct performance of an adult needs to be positively ____. c.
    a. use
    b. problem
    c. reinforced
    d. do
    e. own

23. That these five principles are tied together can be seen. For example, active doing is required of adults when there is a problem to be solved; an adult arriving at answers on his own is a form of active doing; and positive reinforcement of his performance is not possible unless he has actively done something. In developing learning activities for adults, therefore, the teacher should attempt to utilize ____ of these principles of learning. a.

    a. all
    b. most
    c. as many as possible
    d. at least four

24. How can the teacher apply these principles of learning in the classroom? One behavior which the teacher might use is to ask questions which will produce active doing on the part of adults. Which question would produce the active doing needed for progress toward an objective of learning to think critically? #2

    1. Name five types of office lighting systems.
    2. What problems could arise from not always allowing air spaces on both sides of insulation when reflective insulation is used.

    (#1 asks for recall, #2 sets up a problem and requires critical thinking.)

25. A teacher can encourage active doing by adults through assignments. Which assignment would be more likely to produce the active doing needed for progress toward the objective of learning to think critically? #2

    1. Read chapter 18 and be prepared to answer the identification questions at the end of the chapter.
    2. Answer the following question and provide supporting evidence "Is it permissible to figure the loads for the three categories of branch circuits of a home in the same manner."

26. A third behavior which a teacher must practice if he is to encourage active doing by adults is to give them more opportunities to be active during class time. The teacher must thus seek to decrease the dominance of his verbal behavior in class. This means that the teacher will talk ____ and his adult students ____. less more

27. Examples of behaviors which a teacher can exercise to produce active doing by adults are:
    1. Ask ____ that produce active doing. — questions
    2. Give ____ that produce active doing. — assignments
    3. Teacher allows his adult students to ____ more. — talk

28. Teachers can focus adult student learning on problems by raising questions which help adult to identify problems. Which is an example of providing adult student focus? — #1
    1. When can clutch noise be most accurately diagnosed, when the clutch is engaged, or disengaged.
    2. Should oil or grease be kept off friction disc facings?

    (#1 is a problem which has possible correct answers.)

29. Questions to identify problems can also be asked through an assignment which is given to adult students. Which is the better illustration of asking a question through an assignment which will help an adult to focus on a problem? — #1
    1. From your reading, make a list of possible causes of hard steering.
    2. From your reading, make a list of the parts of a hydraulic brake system.

30. A third method which a teacher can use is to make data on a problem available to adults, rather than providing them with an answer to the problem. Which is a better example of this in a situation where adult students have raised the question, "how can several thicknesses of metal be fastened together to make a heavier part?" — #2
    1. The teacher can provide the adults with an explanation of sweat soldering procedure.
    2. The teacher refers the adults to a book which contains information on soldering procedures and the purposes of the various procedures.

31. Examples of behaviors, which the teacher can use to focus adult learning on problems are:
    1. Ask ____ to identify problems. — questions
    2. Give ____ to identify problems. — assignments
    3. Provide ____ rather than answers. — data

32. The third principle of learning which has been considered is the value of an adult arriving at his answers as a result of his own thought, rather than being told the answer. A chief way the teacher can encourage this type of adult work is through the kinds of questions asked. These questions should ask the adult for his answers. To make certain that these answers are ones which the adult has arrived at as a result of carefully considering the evidence available, the teacher will also want to ask him questions which call for him to support or tell the "why" for his answers. The important teacher behavior then is to ask the adult student questions which require him to ____. d.
    a. formulate answers
    b. consider evidence
    c. formulate answers and support them
    d. all the above

33. Which is the best example of the teacher using questions to encourage adults to arrive at answers by their own thoughts? #2
    1. What general classification of varnish formula do you prefer for a floor finish?
    2. What general classification of varnish formula do you prefer for a floor finish and why do you consider your selection most appropriate?
    3. What general classification of varnish formula does the author of your text favor?

34. The fourth principle of learning which the teacher might desire to apply is having adults use what they have learned. This requires the teacher to plan his instructional sequence carefully so that application and cumulation are possible. Which would be an example of providing adult students the chance to use what they have learned, after they have identified possible causes of failure of an electric fuel pump? #1
    1. Attempt to identify the specific cause of failure by examination.
    2. Learn what types of vehicles use electric fuel pumps.

35. If an adult previously has had experience in developing hypotheses for solar load problems, to use this skill and to build on it he should gather evidence to support or reject a hypothesis he developed for a "new" problem.
    True or false. True

36. The final principle of learning presented here is also related to all of the others. The principle of reinforcement is to be applied whenever an adult has demonstrated the kind of response or performance which is desired. According to what has been stated earlier, an adult should receive reinforcement when he takes a personal position on an issue/problem and supports his position with relevant data.
True or false. — True

37. The behaviors that are reinforced by the teacher are likely to be those that adults will learn and value. Thus, if the teacher says he wants his adult students to think critically, but he reinforces their memory behavior through the kinds of questions he asks (including on tests), the adults will be more likely to improve their critical thinking skill than their memory skill.
True or false. — False

38. Therefore, the teacher must make definite decisions about what adult student behaviors he will reinforce. This requires that he establish his objectives for adult learning. Which two of the following objectives best fit with the concepts which have been presented here? — 1 and 4
    1. Adults will be able to interpret data.
    2. Adults will be able to list data.
    3. Adults will be able to identify teacher preferences.
    4. Adults will be able to state problems.

39. Five principles of learning have been presented--very briefly they stress--adult student activity, a problem focus, independent adult effort, adult use of knowledge/skills, and reinforcement. Suggestions made for the application of these principles by teachers include:
    1. Ask ____ which require the type of response desired from the adult. — c.
    2. Provide ____ which require the type of response desired from the adult. — a.
    3. Provide ____ for adults to use in arriving at their own answers. — e.
    4. Talk ____ in the classroom. — b.
    5. ____ instruction so adults can use what they have previously learned. — f.
    6. ____ desired behaviors when they occur. — d.

    a. assignments
    b. less
    c. questions
    d. reinforce
    e. data
    f. organize

INSTRUCTIONAL TECHNIQUES

Defining and Developing Adult Vocational Education Courses

As in the discussion How Adults Learn, there is a goal to be attained in adult vocational instruction--preparing the adult student for employment. To achieve the goal the effective teacher must be technically competent in his occupation. He must also understand and be able to incorporate into instruction the LEARNING CHARACTERISTICS OF ADULTS.

Guides are available to assist in attaining the goal. To determine the numbers of people needed for specific jobs, manpower surveys can be used. These can be obtained from the Employment Security office or more specific data may be obtained by conducting local surveys with respect to specific occupations.

When it has been determined that there is a need for people in a specific occupation, development of programs and/or courses is necessary. The development can be approached in different ways, however, one of the learning characteristics of adults is a TASK ORIENTATION. The course development procedure can incorporate this characteristic by using the tasks compromising the occupation to be learned as its basic elements.

Performing a thorough task analysis is extremely important since it will be the cornerstone upon which the instruction is based. The instructor can obtain task analyses (see section four) which can be modified to meet the needs of the local labor market. In the absence of appropriate task analyses, the instructor can prepare one. Mager (1967) provides an excellent reference for developing an analysis.

Bortz (1973) provides modifications to Mager's procedure which are also valuable. Briefly they recommend:

1. List all of the tasks included in the job.
2. Categorize the tasks by a common element such as those which occur in specific work stations or those which occur at a specific time of day, etc.

Both Mager and Bortz provide forms to assist in organizing the tasks.

The next step in the course development proceudre is based upon the adult learning characteristic, LEARN IN PRECISE STEPS. Most of the tasks you have identified may be better studied if they are specified further, due to their complexity, by the performance steps necessary to accomplish the task.

I. Occupation X

A. TASK #1

1. Performance Step #1
2. Performance Step #2

In the example above there are two performance steps in Task #1 of Occupation X. This proceudre, task detailing, should be performed for all tasks. Each performance step tells what a person must <u>do</u> to accomplish the task. Some performance steps may be complex and making them more precise may aid in the learning process. The more precise elements obtained in further specifying the performance steps are referred to as performance step details. It will rarely be necessary to specify the tasks further.

I. Occupation X

A. Task #1

1. Performance Step #1
2. Performance Step #2

a. Performance Step Detail #1
b. Performance Step Detail #2

The process of analyzing the occupation into precise elements of what must be done provides the instructor with the body of content from which he can select the appropriate level of specification for the student at hand. Careful selection based on the student's ability increases the probability that the student will have SUCCESS IN DOING the task.

Having identified the basic elements of content, the needs and level of the students, the time frame and facilities available for instruction, the instructor can develop his course. The elements of content can be arranged in appropriate sequences to allow for TRANSFER OF LEARNING AND PARTICIPATION. The technique of sequencing materials in the process of course development will be considered later in this section.

The tasks, the elements of content, can readily be converted to objectives for the course. Each objective should describe <u>what the student will be able to do</u> at the end of the learning experience, not in terms of the instructor's activity, nor as an outline of material to be covered. Objectives may be written at the program, course, task and performance step level.

PROGRAM - very general objective statement

COURSE - general objective statement

TASK - specific objective statement

PERFORMANCE STEP - very specific objective statement

Each objective should consist of (1) a statement of what the student will be able to do; (2) a statement of how well the student must perform; and (3) a statement of the conditions under which the student will perform.

In the selection of learning activities through which the objectives will be achieved, many alternatives are available. Some of the basic techniques are described below:

DEMONSTRATION

Requires showing as well as telling. Demonstrations may be useful:

1. To show how to carry out a procedure
2. When written or verbal instructions are unclear or confusing
3. To stimulate interest

Planning considerations for demonstrations include:

1. Convey a single concept, process, or idea within each demonstration.
2. List important steps or processes to be emphasized. The task analysis done provides this portion.
3. List the materials or equipment necessary to carry out each step.
4. Practice the demonstration several times before delivery.

During the demonstration:

1. Explain the purpose of the demonstration and call attention to the key points to be noticed.
2. Gather the class around so that everyone can clearly see and hear.
3. Provide an opportunity for questions after each step.
4. Provide a handout including the key points stressed in the demonstration.
5. Provide opportunity for the class to practice. Variations include dry run, coaching, drills, and puzzles.

LECTURE

A prepared presentation delivered by the instructor to the class. A lecture provides a great deal of information in a short time. To be effective the instructor must be an interesting speaker. The

shorter the lecture the more disciplined the speaker and his preparation must be.

1. As you speak outline your subject.
2. Use many forms of illustrative material.

ROLE PLAYING

An unrehearsed enactment in which participants respond to a working situation. It is effective in dealing with the affective aspects of work. A variation on the method is role reversal. The participants exchange roles and respond to a situation.

DISCUSSIONS

The discussion and its variation allow participants the opportunity to discover or derive information. Participants are able to RELATE PERSONAL EXPERIENCES and the instructor can RESPOND to these. Skillfull leadership is required to keep these from deteriorating into undirected discussions. Discussion variations include brainstorming, diagnostic sessions, and group buzzes.

Many textbooks are available which further detail these methods and others.

EVALUATION

With the task analysis provided, objectives are stated indicating what the adult student needs to be able to do so that appropriate learning activities are designed and selected. It remains to determine whether or not the objectives were attained, i.e., to evaluate the learning experience.

Recall that when the objectives were discussed two of the elements of an objective were a statement of how well and under what conditions

the adult student must perform. These two elements comprise the basic elements for a test or evaluation of the adult's success in accomplishing the tasks identified. If an adult performs a given task as specified in the objective and under the conditions specified, then he has successfully passed that portion of the course.

It becomes apparent, then, that specific statements must be made as to what is to be done (task analysis), how well (objective), and under what conditions (objective).

In summary, a basic and proven technique to develop effective instruction for adults in vocational education programs includes the following:

1. Determine the need for specific type of vocational offering;
2. Obtain or perform a task analysis of the occupation;
3. Write objectives for each of the tasks in terms of what the adult will be able to do;
4. Select appropriate learning activities through which the objectives will be attained;
5. Evaluate the learning experience in terms of the stated objectives, i.e., can the student do.

References

Bortz, Richard F., Related Readings in Occupational Analysis. A mimeographed paper. Southern Illinois University at Carbondale, 1973.

Davis, L.N. and McCallon, E. Planning, Conducting, Evaluating - Workshops. Austin, Texas: Learning Concepts, 1974.

Mager, Robert F. and Beach, Kenneth M. Developing Vocational Instruction. Belmont, California: Fearon Publishers, Inc., 1967.

Arranging Content For Better Adult Learning

Introduction

Effective adult learning is a result of efficient interaction of the teacher and adult with content. Most adult education teachers generally accept the notion that learning is based to a great extent on an adult's psychological motivation and social development. The controversy of logical versus psychological organization of content[1] is an issue which Ausubel states "causes serious disagreement only among extremists at either end of the continuum".[2] Bengelsdorf[3] and Bruner[4] propose that the human intellect is a "dynamic structure" that is shaped and formed by a person's environment and the uses imposed upon it by the environment. As individual's physical development and social environment are important factors to consider in teaching, it is also accepted that learning proceeds more accurately and more efficiently when content is sequenced and organized into learnable units for presentation.[5] If content is to

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[1]David P. Ausubel, "Some Psychological Aspects of the Structure of Knowledge", in Education and the Structure of Knowledge, edited by Stanley Elam, Phi Delta Kappa, Rand McNally and Company, 1964, p. 221.

[2]David P. Ausubel, The Psychology of Meaningful Verbal Learning: An Introduction to School Learning, New York: Grune and Stratton, Inc., 1963, p. 9.

[3]Irving S. Bengelsdorf, "The Role of the Brain and Nervous System in Learning and Memory", Current Research Approaches to Neural Mechanisms of Learning and Memory, National Institute of Education Department of Health, Education and Welfare, Washington, D.C., 1975, p. 7.

[4]Jerome S. Bruner, "The Course of Cognitive Growth", American Psychologist, Volume 19, Number 1, January, 1964, p. 1.

[5]John R. Verduin, Conceptual Models in Teacher Education: An Approach to Teaching and Learning, the American Association of Colleges for Teacher Education, Washington, D.C., 1967, p. 76.

be taught effectively, the content must be logically formed, prepared and translated before it is transmitted to adult student. Although little guidance is available to teachers,[6] decisions as to appropriate teaching methods are an important ingredient of teaching. Determining needed classroom methods are based upon how the adult teacher organized the content for presentation. Placing the content into logical order for teaching adds significant sophistication to the teaching-learning process in the adult classroom.

Few practical instructional preparation techniques and guidelines are available for translating and sequencing content into learnable units. Although curriculum, course and unit objectives prescribe the acquisition of content, most objectives tend not to be inclusive of all content to be taught and learned. For the most part, objectives do not specify how the content is to be prepared, organized, and taught in an adult learning environment. The use of objectives and pre- and post-assessment is not be questioned, rather attention is being given to an essential instructional step which every teacher of adults must perform, consciously or unconsciously. Further, it is frequently assumed that "the sequence of content automatically provides an appropriate sequence of learning."[8] To focus

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[6]Hilda Taba, "Teaching Strategy and Learning," California Journal for Instructional Improvement, Volume 6, Number 4, December, 1963, p. 3.

[7]Robert J. Kibler, Larry L. Barker, and David T. Miles, Behavioral Objectives and Instruction, Boston: Allyn and Bacon, Inc., 1970, p. 7.

[8]Hilda Taba, Curriculum Development: Theory and Practice, New York: Harcourt, Bruce and World, Inc., 1962, p. 295.

more specifically on content and means for its organization,[9] it is suggested that adult teachers may employ specific techniques and guidelines for arranging and structuring content for more efficient, accurate and expedient learning.

A preliminary task in preparation for organizing content is collecting information which fulfills course and unit objectives. Too often, attention is placed initially on teaching methods and aides (e.g. questioning, making use of an overhead, use of handouts) rather than on ways of recognizing and selecting appropriate information for instruction. The need is to examine potential information and determine if the information is acceptable in terms of stated objectives. The crucial task is to determine how to examine and collect content which should be planned for and included in the course and for which instructional plans should be made.

Several means for determining and selecting information may be explored and used. For information concerning performances in which the learning of specific demonstrable behaviors are expected,[10] one approach is to observe and describe the actual conditions and behaviors of people actually engaged in those tasks being recommended.[11] A description of tasks based upon observations and interviews can be used to identify specific information. By collecting descriptive

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[9]Samuel B. Peavey, "The Subject Is Still the Direct Object," The Educational Forum, Volume XL, Number 2, January, 1976, p. 211.

[10]Harry G. Miller, John B. Beasley, and Kevin J. Swick, Drill Re-Examined: A Taxonomy for Drill Exercises Lab Book. ERIC: Clearinghouse for Social Studies/Social Science Education, ED 103311, 1975, p. 3.

[11]Harry G. Miller and Charles E. Greer, "Adult Education: Performance-Based Programs," The Clearing House, Vol. 48, No.2, October, 1973, p. 122.

information and by classifying information on the basis of such criteria as frequency, amount of time, importance, and learning difficulty, a definable body of information can be obtained.[12]

An approach based upon what is taking place assumes that the persons being observed are conscious of what they are doing and why. Furthermore, the length of the observations, the variety of tasks being performed, the expertise of the observed performers and the observer, the number of observations, and the accuracy in describing observations are all important in the description process.

For content which is less performance oriented and not particulary manipulative in nature, and is more explanatory and narrative with emphasis on time, place and setting,[13] the collection of information may take a different form. Historical information, for example, focuses on available sources found in the form of writings, artifacts and memorabilia. Consequently, history is a reflection of the past rather than a study conducted in an original state.[14] History is a composite of artifacts and primary sources which relate information directly about the past. In most instances, reputable secondary sources (i.e. reports of people who were not witnesses to the events) suffice as a means for content development, however, primary sources may be preferable for such purposes as illustration, comparison, justification and validation.

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[12]Robert F. Mager and Kenneth M. Beach, Developing Vocational Instruction, Palo Alto: Fearon Publishers, 1967, p. 12.

[13]Rodney W. Skager and Carl Weinberg, Fundamentals of Educational Research, Glenview: Scott, Foresman and Company, 1971, p. 51.

[14]Edward Hallett Carr, What Is History? New York: Random House, 1967, p. 24.

Another approach for gathering information involves adult teachers using their own experience, training and knowledge as a means for determining what content should be taught. This approach is frequently used to determine course content and appropriate learning experiences. The quality, variety, length and currency of training and experience are factors determining what the adult teacher might perceive as important.

A third approach frequently used to determine appropriate information is to survey and note information which professionals and professional organizations recommend for inclusion in units and courses. Professional associations and organizations have typically identified content, sources and topics as well as standards and codes for members. Many of the vocational training areas provide for various levels of expertise in terms of recognition and licensing. Such standards often establish qualifications for certain types of responsibilities.

Several approaches, therefore, may be employed to assist in ascertaining and collecting appropriate objective oriented content. The question arises, however, "What approach or approaches should be used?" "What criteria may be employed to decide which is appropriate?" A partial answer may be achieved by assessing whether or not the information selected fulfills course and unit objectives.

Suggestions for Sequencing Content

Once information is gathered, it must by organized into a logical teaching sequence. Sequencing means the arrangement of content into an appropriate order and perspective. Most content may be arranged in different ways, but all forms convey a priority, a progression of items, identifiable units or steps and a means for fulfilling stated objectives.

SIMPLE TO COMPLEX. Arranging content is a hierarchal manner so that progression is from simple to more complex understandings, is one form of structuring consideration. That is, arranging information by establishing and dealing with the more elementary aspects and proceeding to the more difficult content. The elementary aspects of the content do not necessarily mean that only basic or the more tangible information are involved and associated with this approach to organizing content. Abstractions, interpretations, and concepts can be dealt with using this approach, as well as more concrete information.

By using this approach, adult learners can comprehend and use the less complex information as a means of association and transfer to more difficult content. Further, by providing more learning success initially, the adult will feel more secure in coping with more advanced and complex information. In most adult courses, especially in adult basic education and GED courses, establishing learning confidence through a progression of successful experiences needs to be assured. A sense of achievement and completed tasks help reinforce individual confidence. Another reason for simple to complex organization is that some subject areas require prerequisite learnings which

typically progress in difficulty. This generally means that more refined information is presented after mastery of underlying content.

How are simpler understanding determined and distinguished from the more complex? How is this approach applied to arranging and structuring course or class material? Determining and reviewing content already learned, and associating learned content with content to be learned, are common means for identifying and using this approach. One draws a parallel between an unknown and known and the identifiable relationship becomes the center of focus.[15] Selection of content which possesses the fewest or minimum components or that content which is the most rudimentary is yet another means. Being less complex in nature, allows for a foundation to be established from which more advanced content may be approached. For content which tends to be more skill oriented or manipulative in nature, this approach means the content with fewer interrelationsnips or manipulations will be a more preferable beginning point, rather than content which is multiple in nature and requires several actions for performance. In some instances when organizing content from few to many, the complex content represents exceptions, and extensions, of rules, principles and understanding previously mastered. Frequently simple content lends itself to more direct practice, measurement and proficiency. Depending on capabilities, in most instances simpler information may be learned and mastered rather quickly while more intricate content takes more time and regulated practice.

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[15]Harry Miller and Kevin Swick, "Is An Analogy a Horse of a Different Color," unpublished paper presented at the National Association for Public Continuing and Adult Education Conference, 1975.

GENERAL TO SPECIFIC. Another way to structure content is to arrange the material from generalized concepts to more specific skills/knowledge contained within the content area. By establishing the theme, principle, or concept, as the basis or starting point of the learning experience, the purpose or intent of the total instructional objective can be emphasized and clarified for adults. The establishment of the general thrust of the instructional process is essential, if adults are to be able to relate the more specific components of the content area to the overall purpose of the instructional unit under study.

A basic advantage of the general to specific approach is that the adult is first introduced to a total view of the subject matter to be studied. Usually this initial, general introduction to content takes the form of a classification and/or categorical process by which the adults can (once he/she has learned the system) then relate specific pieces of data to the total content system. This approach is especially effective when the adult is not expected to memorize the basic content structures and only needs to apply the general to specific information.

A further advantage inherent in the general to specific approach to structuring content is, an initial overview of the content area makes it easier for an adult to retain specifics which are frequently used in studying the subject matter under consideration. The overview allows for the adult to retain a framework or structure for understanding the conceptual basis of the content without having to retain a vast amount of specifics contained within the sub-structures of the subject matter under study.

The utilization of this approach to structuring content also has

advantage for long term units of study. Adult teachers, in structuring appropriate content from generalized concepts to more specific aspects of a subject matter area will be more effective over a period of time in presenting their material. A logical and sequential schemata by which adult teachers can frequently refer to as well as translate information into an understandable format is especially useful in certain learning situations. Likewise, adults are better able to internalize the content under study because they have a frame of reference of how the subject matter evolves and corresponds to the classifications put forth by the adult teacher.

The general to specific approach to structuring content can be used in a variety of ways and in varied instructional settings. This approach to readying content can be used in the teaching of isolated units of study, dissemination of comprehensive courses of knowledge, the development of specialized mechanical and/or intellectual skills, the teaching of brief mini-courses of study, and as a method of introducing adults to new and unfamiliar fields of knowledge.

This approach can be used to structure content in such a way that the subject matter is more translatable in terms of the situations used to convey concepts and/or skills to adults. For example, the adult teacher in readying content to be presented in a visual-graphic form may want to develop visual-graphic slides or transparencies that present the material in a sequenced, general to specific format. Or, the adult teacher who is attempting to organize a field trip in such a way as to introduce adults to a new concept (possibly a sewage treatment process as it relates to environmental education) may want to sequence the field trip agenda in such a way that adults are first

exposed to a general overview of what is being observed and studied.

The general to specific approach to structuring content can be used in various ways such as are described in the previous three paragraphs. A critical question in relation to the use of this approach is: When should the general to specific approach be used in structuring and readying content for instructional purposes? The following are two criteria to use in deciding if this approach is the appropriate method to use in structuring content for learning situations:

1. Is the content under consideration based upon major conceptual, schematic, and/or categorical assumptions?

2. Can the content which is being taught best be presented to the student by initially providing them with a general overview of the basic structure and/or concepts at the base of the subject matter?

If the answer to the above two questions is yes, the general to specific approach is probably a useful way for you to structure the content.

CONCRETE TO ABSTRACT. An effective way of structuring content for use by adults who are unfamiliar with the subject matter, or are having some difficulty with some aspect of the content area, is to organize the material in a concrete to abstract sequence. The concrete to abstract approach to structuring content is based upon the idea that an adult can acquire basic skills and knowledge better when he/she is able to initially deal with it in some concrete-manipulative manner. This approach involves the adult in actual physical observation and manipulation of materials reflective of the concepts and/or skills to be learned. Progressing from concrete study exercises, the adult is gradually introduced to ideas in a more abstract-symbolic form.

There are many advantages inherent in the use of the concrete to abstract approach to structuring content. For example, an adult basic education teacher of mathematics who is teaching basic shapes and sizes can begin by having adults observe and manipulate wooden images of triangles, squares, and circles. The adults can see and feel the material being studied.

An advantage to this approach to structuring content is that by starting the unit of study with concrete, visible models of content, adults will develop a reliable reference point to which they can relate more complex, abstract material. Adults can begin their study of community living by viewing poster size pictures of various types of community life. Later as they study the sociology of urban living they can use the original poster pictures as a point of reference in their study.

Adults who have difficulty grasping new concepts or skills find the concrete to abstract approach advantageous to them in terms of long range acquisition of ideas being studied. Too often, content is approached in an abstract fashion because it is convenient for the adult teacher. Yet when adults, especially those who lack the vocabulary or thinking skills to grasp abstract ideas, can view and work with the situation in a concrete fashion they are better able to find success in the learning experience. The concrete to abstract approach is a useful way of structuring content when introducing adults to new content, assisting adults who are having difficulty with content to better grasp subject matter, and in conducting 'hands on' review sessions of ideas being studied.

The concrete to abstract approach to structuring content can be

used in many ways and in a variety of different situations. Subject matter can, for example, be sequenced in a format where the content is organized from the object to the pictorial symbol much as a flow-chart is built. Or, content such as the study of a foreign language, can be arranged so that adults first deal with representative objects that are a part of the culture of the people whose language they are studying. Adults can then utilize this initial experience as a reference point as they learn new content.

Similarly, this approach can be used in a variety of instructional settings. The concrete to abstract approach to readying content for adults can, often be used as the basis for entire instructional units. The adult educator who is teaching an applied art, such as mechanical arts, will find it useful to use this approach when introducing adults to mechanical parts and mechanical functions. The use of a 'show and tell' method of introducing adults to a carburetor, air filter, plugs, valves, and other automotive parts, is an effective technique of teaching content related to the functions of the various automotive parts.

In attempting to determine if the content being taught is amenable to the concrete to abstract approach to the structuring of content consider the following two criteria:

1. Does the content you teach lend itself to the use of concrete-manipulative designs, objects, and/or models of instruction?

2. Does the content area you work with contain a structural design that will lend itself to the sequencing of subject matter from the concrete to the more abstract?

If you can answer the above two questions in the affirmative then this approach to readying content for instructional purposes is probably

suitable for your use.

CHRONOLOGY. The relating of information in terms of time, fixed periods, and dates, in order of occurrence, is yet another approach to sequencing. It is a means of illustrating a successive relationship of one event to another. Usually chronology refers to arranging information that has occurred in terms of that which more immediate and that which is of a more remote nature. Chronology is not restricted to just arranging the past, but may also be used for arranging proposed events and activities that will occur, as with specific economic theories. Chronology, in other words, may be used with both past and future.

A further basic feature of chronology which is not a feature of other forms of content organization, is the potential for conveying a cause and effect relationship. The capability of relating one event or activity to another in a resultant fashion is a basic principle in the formation of scientific laws and in general, the regulation of nature. As such, chronology tends to be more descriptive, explanatory, and narrative, than analytical in nature.

There are several advantages to using chronology as a means of content organization. Foremost, it is an easy form to use in that frequently it is a matter of simply noting the events, activities, or places that happened first, second, third, and the like. Consequently, it is a form that is frequently used and most people are accustomed to learning and organizing their learning by this approach. It is a common method of putting forth information.

Secondly, it is a basic means of content organization which facilitates other forms of arranging information. It provides a base-

line, i.e. a beginning place or point as well as a terminal point. A chronological view of information provides a framework from which rearrangement of the content may be accomplished for improved learning. For example, content which is general in nature can be identified and specific information can be used as illustrations.

Third, a chronological sequence allows for the identification of patterns, commonalities, and consistency. From these patterns, probability can be determined and predictions can be made. The more consistency involved over a long period of time, the more accuracy in predicting. Related to this, is the notion of comparison. By knowing and studying what has gone on before or previously, a point of reference can be established to make comparisons and evaluations. The process of evaluation is in fact a process of comparing.

A definite limitation of chronology is that it is an organizational means which is difficult to use when a great deal of information exists within a very short time span. Too much information existing within a very limited period of time tends to distract from a cause and effect relationship and to lessen the power of emphasis. The appropriate amount of information and time to be covered depends on objectives and the information to be presented.

The use of chronology in content organization, once desired information has been decided upon, is easily achieved if the information is available. It is a time form in which occurrence is the primary means for location of information in the content organization. Information which occurred first, is rated first, after a baseline for beginning has been determined.

Summary

Organizing information, whether done formally in preparing for an adult education class, or done for self-learning is the process of bringing rationality and meaning to information. Arranging information places emphasis on content.[16] When information is logically arranged for learning, greater meaning is derived from information because order becomes a means to understanding.

Arranging content for more effective learning in the adult classroom is not an easy task. It is an essential but often missed instructional step which many adult educators take for granted. Arranging content for better adult learning cannot be done haphazardly and should not be based solely on personal experiences. It is an instructional tool which can make learning more efficient and efficiency in learning is a goal all educators, including most certainly adult educators have in common.

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[16]Jacques Barzun and Henry F. Graff, The Modern Researcher, New York: Harcourt, Brace, and World, Inc., 1957, p. 230.

RESOURCES AND REFERENCES

I Why Adult Vocational Education

A. Wirtz, Willard. The Boundless Resource. Washington, DC: The New Republic Book Company, Inc., 1975. ($7.95)

Provides arguments for vocational education through several delivery systems, and a presentation of data on clientele.

B. Adams, D.A. Review and Synthesis of Research Concerning Adult Vocational and Technical Education. Blacksburg, VA: Virginia Polytechnic Institute and State University, 1972. (ERIC No. VT 014705). ($5.00)

An excellent presentation on and discussion of all aspects of adult vocational education. Includes a comprehensive bibliography.

C. Bergin, Thomas D. "Continuing Education in the United States: The Challenge and Responsibility," in Stephen D. Kertsz (ed.), The Task of Universities in a Changing World, University of Notre Dame Press, London, 1971.

D. Burns, Hobert: Sociological Backgrounds of Adult Education. Center for the Study of Liberal Education for Adults, 1964.

II How Adults Learn

A. Adams, D.A. Review and systhesis of research concerning adult vocational and technical education. Blacksburg, VA: Virginia Polytechnic Institute and State University, 1972. (ERIC No. VT 014705) ($5.00)

B. Birren, J. E. Handbook of Aging and the Individual, University of Chicago Press, 1959.

C. Botwinick, Jack, et al. Too Old To Learn? Morehead State University, 1971.

D. Garry, Ralph, et al. The Nature and Conditions of Learning, Prentice-Hall, Inc., 1969.

E. Kidd, J.R. How Adults Learn. Associate Press, 1971.

F. Knowles, Malcolm. The Learner Looks at the Learning Climate. Learning Resources Corporation, 1972.

G. Lorge, Irving. Adult Education: Theory and Method. Adult Education Association of the USA, 1963.

H. Lorge, Irving, Psychology of Adults. Adult Education Association of the USA, 1963.

J. Owens, W.A. "Age and Mental Abilities." In Methods of Adult Education. Edited Barton Morgan, Glenn Holmes and Clarence Bundy. Interstate, 1960.

K. Thorndike, Edward, et al. Adult Learning. Macmillan Company, 1928.

L. Verner, Coolie and Davison, Catherine. Physiological Factors in Adult Learning and Instruction. Florida State University, 1971.

M. Wechsler, David. The Measurement and Appraisal of Adult Intelligence. Williams and Wilkins Company, 1958.

N. Welford, A.T. "Psychomotor Performance." In Handbook of Aging and the Individual. Edited J. E. Birren, University of Chicago Press, 1959.

O. Miller, H.G. and Buser, R.L. Developing The Individual in the Adult Classroom. An experimental instrument designed for Adult and Continuing Education. College of Education, Southern Illincis University, Carbondale, IL 1972.

P. Miller, H.G. and Holden J.B. Career Improvement and Satisfaction: Initiating a Positive Self-Perspective. A Mimeographed paper. College of Education, Southern Illinois University, Carbondale, IL 1976.

III Instructional Techniques

A. Manpower Surveys and Techniques

1. Illinois State Employment Service - both local and state data are available.

2. Forecasting Manpower Needs - A Manual for Local Vocational Planning. The Center for Business and Economic Research, Western Illinois University, 1972.

A guide to developing your own manpower analysis. The result of a study funded by the Division of Adult, Vocational and Technical Education, Illinois Office of Education.

B. Task Inventories

1. Directory of Task Inventories, Vol. 1, 1974, 49 pp., (UN-6-$4.00).

2. Directory of Task Inventories, Vol. 2, 1975, 108 pp., (UN-7-$7.00)

3. Directory of Task Inventories, Vol. 3, 1976, 98 pp. (UN-8-$6.25)

These three volumes may be obtained from:
The Center for Vocational Education
The Ohio State University
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Columbus, Ohio 43210

C. Instructional Methods

1. Davis, L.N. and McCallon, E. Planning, Conducting, Evaluating Workshops. Austin, Texas: Learning Concepts, 1974.

An excellent description of instructional methods appropriate for adult learners.

2. Miller, H.G., Swick, K. and Beasley, J. Drill as an Instructional Tool in the Classroom. Monograph. Springfield, IL: Illinois Office of Education, 1975.

3. Klevins, Materials and Methods in Adult Education. Klevins Publishing, 1972.

D. Boone and Quinn. Curriculum Development in Adult Basic Education. Follett, 1967.

IV General Resources for Adult Vocational Education

A. Adams, D.A. Review and Synthesis of Research Concerning Adult Vocational and Technical Education. Blacksburg, VA: Virginia Polytechnic Institute and State University, 1972. (ERIC No. VT 014705) ($5.00)

B. Informal Bibliography Series

The following are available from:
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3. Adult Education Program Evaluation. #7

4. Second Careers. #29

5. Continuing Professional Education. #8

6. Adult Basic Education Curriculum. #12

7. Adult Education: Bibliographies and Reviews. #6

C. Adult vocational education - An annotated bibliography of publications and projects. October 1975. The Center for Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210.

D. Moore, A.B. Career Education: The Role of Adult Education. The Center for Vocational and Technical Education, The Ohio State University, Columbus, Ohio 43210. 1973. (ERIC No. VT 020369).

E. A Summary of Four Alternatives for Providing Educational Opportunities to Illinois Adults. Illinois Office of Education, Adult and Continuing Education Section.

F. Illinois State Plan for Adult Education. Illinois Office of Education.

G. Today and Tomorrow in Illinois Adult Education. Illinois Office of Education, Springfield, IL

Techniques for Using ERIC

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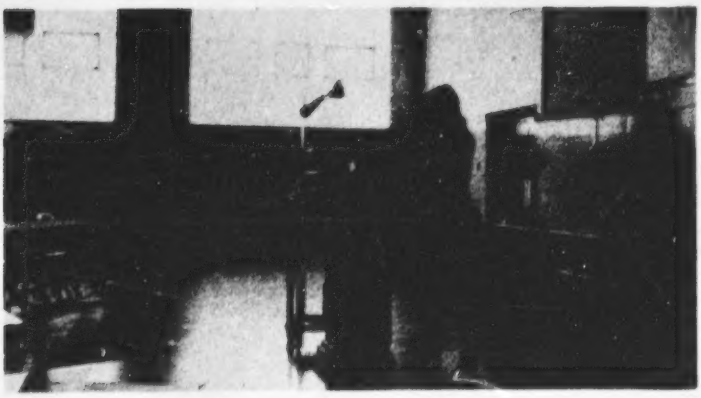
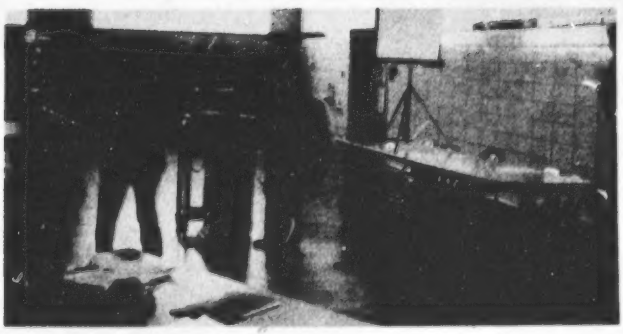


Workshop Staff Member Preparing

Registration

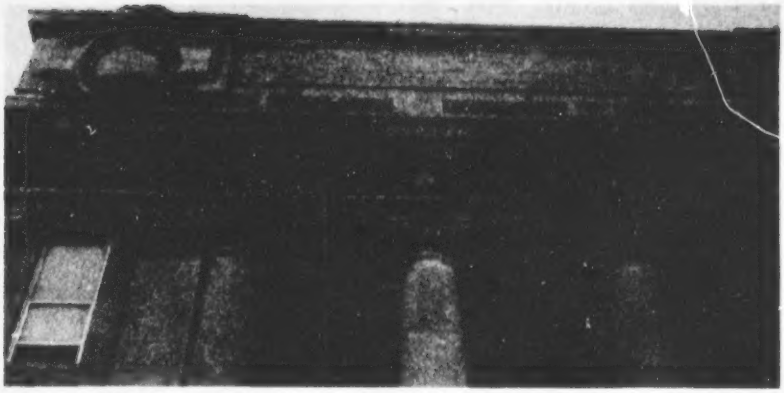


Workshop Member Presenting

Small Group Interaction

Peoria High School

Peoria, Illinois



Site of Workshop

Registration of Participants

Group Discussion

Site of Workshop

Coffee Break

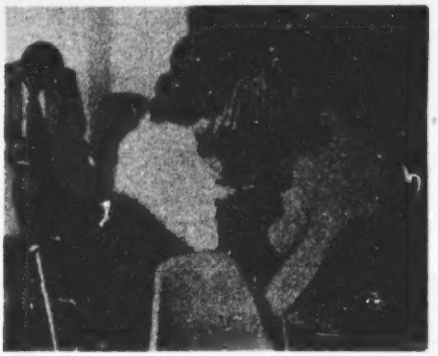
Informal Discussion

Ambassador Motor Inn

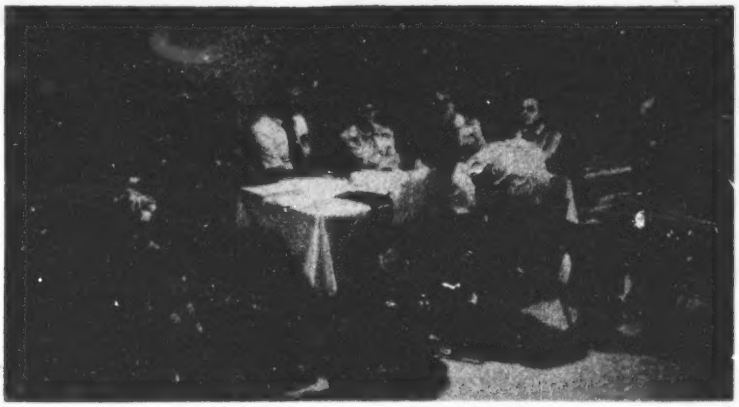
Decatur, Illinois

Presentation By Workshop Staff Member

Large Group Activity



Small Group Activity



Evening Informal Interaction

CE 007 208